

*A Project of*  
*The* Sacramento Valley  
Water Management Agreement

## ACID Churn Creek Lateral Improvements



PREPARED FOR  
**PROPOSITION 13  
AGRICULTURAL FEASIBILITY STUDY PROGRAM**

March 1, 2002

**Consolidated Water Use Efficiency 2002 PSP  
Proposal Part One:  
A. Project Information Form**

1. Applying for (select one): ☐ (a) Prop 13 Urban Water Conservation Capital Outlay Grant  
☒ (b) Prop 13 Agricultural Water Conservation Capital Outlay Feasibility Study Grant  
☐ (c) DWR Water Use Efficiency Project
2. Principal applicant (Organization or affiliation): Anderson-Cottonwood Irrigation District
3. Project Title: Churn Creek Lateral Improvements to Partially Address CALFED Quantifiable Objectives 6, 7, and 8
4. Person authorized to sign and submit proposal:
- |                 |   |
|-----------------|---|
| Name, title     | <u>Dee Swearingen, General Manager</u>          |
| Mailing address | <u>2810 Silver St., Anderson, CA 96007-4297</u> |
| Telephone       | <u>(530) 365-7329</u>                           |
| Fax.            | <u>(530) 365-7623</u>                           |
| E-mail          | <u>acid@shasta.com</u>                          |
5. Contact person (if different):
- |                  |                        |
|------------------|------------------------|
| Name, title.     | <u>(same as above)</u> |
| Mailing address. | <u></u>                |
| Telephone        | <u></u>                |
| Fax.             | <u></u>                |
| E-mail           | <u></u>                |
6. Funds requested (dollar amount): \$100,000
7. Applicant funds pledged (dollar amount):  
The applicant will administer the grant, manage the service contract, and submit quarterly reports. The equivalent cost of these tasks, to be absorbed by the District, is estimated to be \$15,000.
8. Total project costs (dollar amount): \$100,000 for Feasibility Study
9. Estimated total quantifiable project benefits (dollar amount): Up to \$1 million per year (conserved water and power)

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Percentage of benefit to be accrued by applicant: 10%\_\_\_\_\_

Percentage of benefit to be accrued by CALFED  
or others: 90%\_\_\_\_\_

10. Estimated annual amount of water to be saved (acre-feet): 19,000\_\_\_\_\_

Estimated total amount of water to be saved (acre-feet): 19,000 acre-feet/year in  
perpetuity\_\_\_\_\_

Estimated benefits to be realized in terms of water  
quality, instream flow, other:

Project benefits include decreased diversions and availability of this water for other beneficial uses; elimination of a diversion, reducing exposure of fish to entrainment or impingement and enabling the diversion site to revert to natural riparian and aquatic habitat; and elimination of 770,000 kWh per year in energy consumption for pumping. Seepage losses east of the Sacramento River have been estimated at 8,700 acre-feet/year. Presumably, there also are seepage losses on the west side of the river, increasing the estimated potential conservation benefits to 19,000 acre-feet/year.

11. Duration of project (month/year to month/year): 6 months from receipt of funding to complete the Feasibility Study\_\_\_\_\_

12. State Assembly District where the project is to be  
conducted: No. 2\_\_\_\_\_

13. State Senate District where the project is to be conducted: No. 4\_\_\_\_\_

14. Congressional district(s) where the project is to be  
conducted: No. 2\_\_\_\_\_

15. County where the project is to be conducted: Shasta\_\_\_\_\_

16. Date most recent Urban Water Management Plan  
submitted to the Department of Water Resources: N/A\_\_\_\_\_

17. Type of applicant (select one):  
Prop 13 Urban Grants and Prop 13  
Agricultural Feasibility Study Grants:

☐ (a) city  
☐ (b) county  
☐ (c) city and county  
☐ (d) joint power authority  
☒ (e) other political subdivision of the State,  
including public water district  
☐ (f) incorporated mutual water company

DWR WUE Projects: the above  
entities (a) through (f) or:

☐ (g) investor-owned utility  
☐ (h) non-profit organization

**Consolidated Water Use Efficiency 2002 PSP**  
**Proposal Part One:**  
**A. Project Information Form**

- ☐ (i) tribe  
☐ (j) university  
☐ (k) state agency  
☐ (l) federal agency
18. Project focus: ☒ (a) agricultural  
☐ (b) urban
19. Project type (select one):  
Prop 13 Urban Grant or Prop 13  
Agricultural Feasibility Study Grant  
capital outlay project related to:
- ☐ (a) implementation of Urban Best  
Management Practices  
☒ (b) implementation of Agricultural  
Efficient Water Management Practices  
☐ (c) implementation of Quantifiable  
Objectives (include QO number(s))  
6, 7, 8  
☐ (d) other (specify)  
\_\_\_\_\_
- DWR WUE Project related to:
- ☐ (e) implementation of Urban Best  
Management Practices  
☐ (f) implementation of Agricultural Efficient  
Water Management Practices  
☐ (g) implementation of Quantifiable  
Objectives (include QO number(s))  
☐ (h) innovative projects (initial investigation of  
new technologies, methodologies,  
approaches, or institutional frameworks)  
☐ (i) research or pilot projects  
☐ (j) education or public information programs  
☐ (k) other (specify)  
\_\_\_\_\_
20. Do the actions in this proposal involve  
physical changes in land use, or  
potential future changes in land use? ☐ (a) yes  
☒ (b) no

If yes, the applicant must complete the  
CALFED If yes, the applicant must complete  
the CAL PSP Land Use Checklist found at  
[http://calfed.water.ca.gov/environmental\\_docs.html](http://calfed.water.ca.gov/environmental_docs.html)  
and submit it with the proposal.

**Consolidated Water Use Efficiency 2002 PSP  
Proposal Part One:  
B. Signature Page**

By signing below, the official declares the following:

The truthfulness of all representations in the proposal;

The individual signing the form is authorized to submit the proposal on behalf of the applicant; and

The individual signing the form read and understood the conflict of interest and confidentiality section and waives any and all rights to privacy and confidentiality of the proposal on behalf of the applicant.

\_\_\_\_\_  
Signature

Dee Swearingen, General Manager  
Name and title

\_\_\_\_\_  
Date

# Proposal Part Two

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## Project Summary

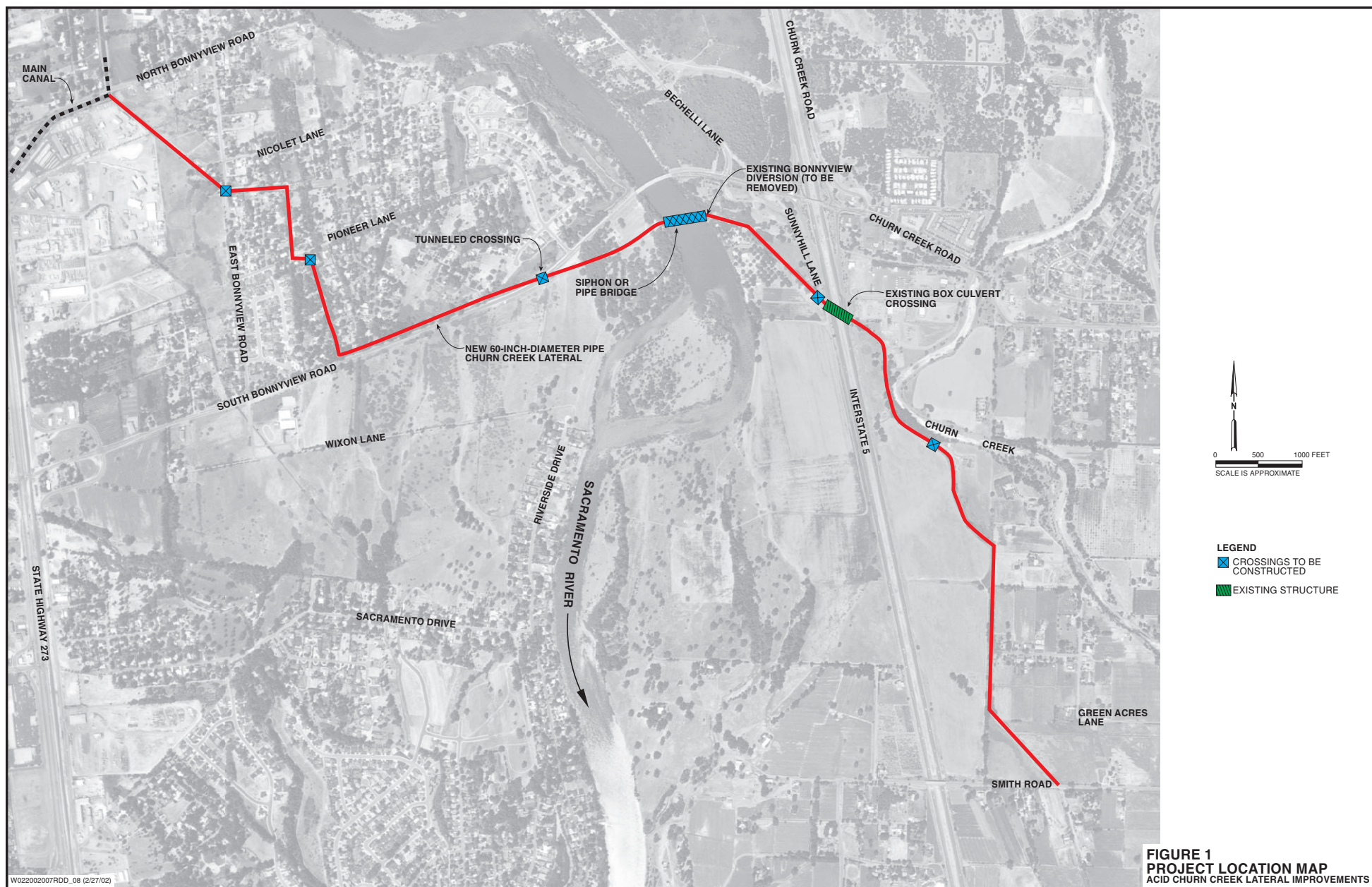
The ACID is considering the feasibility of irrigation system improvements to replace the Churn Creek Lateral and Bonnyview Diversion on the Sacramento River in Redding (Figure 1). Project goals are to replace aging, undersized conveyance facilities. Objectives include restoring original delivery capacity, improving delivery reliability, and eliminating conveyance losses.

Pre-1920 facilities include open-ditch and piped sections, with an elevated flume over the Sacramento River, to deliver water from the ACID Main Canal to the Churn Creek Bottom on the east side of the river. After the flume was washed out in a major flood in 1937, Bonnyview Diversion was constructed, consisting of a screened pump station, the Churn Creek Pumping Plant, on the east bank of the river immediately downstream of the South Bonnyview Road Bridge. The Churn Creek Pumping Plant had an original capacity of 75 cubic feet per second (cfs), consistent with historical demands and deliveries on the east side of the river. But as a result of refurbishment, the current Churn Creek Pumping Plant has a maximum capacity of about 60 cfs. The lateral has significant seepage losses and evapo-transpiration losses through vegetation along the unlined channel.

The proposed method to improve the lateral is to replace approximately 16,100 feet of unlined canal with a buried 60-inch-diameter pipe and construct a new flume or siphon crossing of the Sacramento River. The new buried pipe lateral also will allow the removal of the existing Bonnyview Diversion (Churn Creek Pumping Plant).

This proposal is to secure funding for the feasibility study (FS) and environmental reconnaissance. In spring 2001, a DWR Water Conservation Program grant was approved for these activities and for this project, but funding was not allocated. The expected outcomes of the FS include stakeholder outreach, data collection (water surface elevation data, typical canal dimensions and profile, and typical widths of existing canal right-of-way and adjacent open space to evaluate project feasibility; cursory-level geotechnical/hydrogeologic field reviews; aerial photo and mapping coverage at a scale appropriate for conceptual design and FS report drawings), hydrologic evaluations (to determine magnitude of achievable water conservation by constructing a simple water balance indicating estimates of Churn Creek lateral deliveries, evaporation, leakage and spills, and seepage for current and proposed facilities), alternatives analysis, conceptual design, identification of environmental documentation and permitting requirements, order-of-magnitude cost estimate for improvements, and Feasibility Report.

The estimated \$14.4 million project cost will provide benefits including decreased diversions and availability of this water for other beneficial uses; elimination of a diversion, reducing exposure of fish to entrainment or impingement and enabling the diversion site to revert to natural riparian and aquatic habitat; and elimination of 770,000 kilowatt hours per year in energy consumption for pumping. Seepage losses east of the Sacramento River have been



estimated by previous studies to be 8,700 acre-feet/year. Presumably, there also are seepage losses on the approximately 1.9-mile lateral segment on the west side of the river, increasing the estimated potential conservation benefits to 19,000 acre-feet/year.

## A. Scope of Work: Relevance and Importance

### 1. Nature, Scope, and Objectives

The proposed project was identified in the Short-term Workplan developed as part of the Sacramento Valley Water Management Agreement (Agreement). This unprecedented agreement was developed by Sacramento Valley water users, export interests, the California Department of Water Resources (DWR), and U.S. Bureau of Reclamation (USBR) as an alternative to a potentially contentious process within Phase 8 of the State Water Resources Control Board (SWRCB) Bay-Delta Water Rights Hearings. The intent of the Agreement is to establish a framework to meet water supply, water quality, and environmental needs through a cooperative project development process. Each of the water system improvement projects evaluated under the Agreement, including the project described herein, would provide benefits toward achieving at least one of four quantifiable objectives:

- Provide flow to improve aquatic ecosystem conditions
- Decrease nonproductive evapotranspiration (ET)
- Provide long-term diversion flexibility to increase the water supply for beneficial uses
- Reduce salinity to enhance and maintain beneficial uses of water

The proposed project seeks to improve a segment of the Churn Creek Lateral to enable replacement of an unlined section of channel and restore the original delivery capacity. The scope includes replacing approximately 16,100 feet of unlined channel with a buried 60-inch-diameter pipe and constructing a new flume or siphon crossing of the Sacramento River. The new buried pipe lateral also will allow the removal of the existing Bonnyview Diversion (Churn Creek Pumping Plant). Project goals are to replace the aging, undersized conveyance facilities to achieve the objectives of restoring original delivery capacity, improving delivery reliability, and eliminating conveyance losses. **These goals and objectives respond to CALFED Quantifiable Objectives 6, 7, and 8.**

### 2. Critical Local, Regional, Bay-Delta, State, or Federal Water Issues

The project is an outgrowth of the Sacramento Valley Water Management Agreement reached in April 2001 among more than 100 organizations. The Agreement was reached as part of Phase 8 of the State Water Resources Control Board Bay-Delta Water Rights Hearings by the Sacramento Valley water users, the California Department of Water Resources, the U.S. Bureau of Reclamation, and export water users. The Agreement is consistent with other water management activities and provides for managing water in a way that meets water supply, water quality, and environmental needs throughout the Sacramento Valley and the State of California.

#### CALFED Quantifiable Objectives

The project is consistent with the following CALFED Quantifiable Objectives for Subregion 1, the Redding Basin:



- No. 6 (provide flow to improve aquatic ecosystem conditions)
- No. 7 (decrease non-productive ET to increase water supply for beneficial uses)
- No. 8 (provide long-term diversion flexibility to increase water supply for beneficial uses)

### **Relation to Other Local, Regional, Bay-Delta, State, and Federal Objectives**

This project is needed to restore original delivery capacity, improve water supply reliability, and eliminate conveyance losses within the project area. Therefore, it will provide water conservation benefits consistent with the following primary CALFED objective:

- Reduce the mismatch between Bay-Delta water supplies and current and projected beneficial uses dependent on the Bay-Delta system

Additionally, the proposed project will be consistent with the following specific objectives of the CALFED Water Use Efficiency Program<sup>1</sup>:

- Reduce existing irrecoverable losses
- Achieve multiple benefits
- Preserve local flexibility
- Use incentive-based actions over regulatory actions
- Build on existing water conservation and management programs

The Churn Creek lateral is characterized by significant leakage and is undersized. A study by the U.S. Soil Conservation Service (now called Natural Resource Conservation Service) estimated the seepage losses in the 1.3-mile segment of the Churn Creek Lateral that is east of the Sacramento River at 8,700 acre-feet/year<sup>2</sup>. Presumably, there also are seepage losses on the approximately 1.9-mile segment of the lateral on the west side of the river, and there are evaporation losses along the entire 3.2-mile-long (17,050-foot) Churn Creek Lateral.

Replacing this lateral with a 60-inch-diameter pipeline will eliminate these seepage and evaporation losses, potentially saving a minimum of 8,700 acre-feet/year of water for other beneficial uses. Also, the proposed pipeline, if found to be feasible, will have a 75-cfs peak flow capacity versus the undersized 60-cfs capacity of the existing Churn Creek Pumping Plant. Consequently, the portion of the Churn Creek Lateral that serves the east side of the Sacramento River, which currently relies on the pumping plant to convey water across the river, will convey its original water delivery capacity and, hence, provide a more reliable supply to meet peak irrigation requirements. In conclusion, the proposed project will reduce or eliminate seepage and evaporation losses, conserve water, restore original delivery capacity, and improve the reliability of water deliveries east of the river during periods of peak irrigation.

<sup>1</sup> CALFED Bay-Delta Program. 1999. *Water Use Efficiency Program*. Revised Draft, February 1999.

<sup>2</sup> U.S. Soil Conservation Service. 1982. *Anderson-Cottonwood Watershed Area Study*. Prepared by Redding Field Office and U.S.D.A. River Basin Planning Staff, Davis, California, in cooperation with Western Shasta County Resource Conservation District. December.

The project also is consistent with CALFED Ecological Restoration Objectives. The Bonnyview Diversion was retrofitted with a fish screen in 1992 in response to requirements of the National Marine Fisheries Service and the U.S. Army Corps of Engineers in a Biological Opinion (Opinion) issued in 1992. The Opinion states that distribution of winter-run chinook salmon spawning sites in 1991 indicated that 90 percent of the observed spawning sites were located at or above the Bonnyview Diversion location. The diversion is in an area extensively used by winter-run fry that are redistributing in the upper river or migrating downstream during the later part of the irrigation season. This area also is used by the other three chinook runs, steelhead trout, and other resident species.

A CALFED-funded project, the “ACID Fish Passage Improvement Project” at the ACID Diversion Dam in Redding about 6 miles upstream of the Churn Creek Pumping Plant, was recently completed. The ACID Fish Passage Improvement Project provided improvements to the ACID Main Canal intake, including a 450-cfs fish screen that meets current NMFS and California Department of Fish and Game (CDFG) fish protection criteria. The Fish Passage Improvement Project also provided improvements to the fish ladders at the ACID Diversion Dam. This project will improve the reliability of ACID’s diversions from the Sacramento River and reduce fisheries losses related to entrainment and impingement. The new fish screen was designed with adequate screen area and capacity to ultimately facilitate the removal of the Churn Creek Pumping Plant, which is anticipated to become feasible after the presently proposed improvements to the Churn Creek Lateral are completed.

Removing the Churn Creek Pumping Plant and restoring the direct connection between the Main Canal and the ACID service area east of the river will effectively consolidate two Sacramento River diversions into one. Although the fish screen at the Bonnyview Diversion, which was constructed in 1992, still complies with applicable fisheries protection criteria, the consolidation of diversions offers the following benefits:

- Reduced exposure of juvenile salmonids to screen facilities
- Reduced monitoring and maintenance requirements, for both District and fisheries agency staff
- Fewer diversion sites equate to less risk of entrainment from screen failure, which may result from equipment failure or vandalism
- Potential to salvage the existing pumps and screens that comprise the Bonnyview Diversion and make them available to CDFG for use on refuge areas, or for a similar beneficial use
- Reduced energy consumption to power the three 300-hp pumps

Moreover, consolidation of diversions is one of the fundamental goals of the CALFED program’s fisheries restoration component and the Anadromous Fisheries Restoration Program, along with screening diversions and improving fish passage.

An additional benefit will result from removing the Bonnyview Diversion and allowing the site to revert to aquatic and streambank habitat. This element of the project will provide ecological benefits consistent with the following primary CALFED objective:

- Improve and increase aquatic and terrestrial habitats and improve ecological functions in the Bay-Delta to support sustainable populations of diverse and valuable plant and animal species

## **B. Scope of Work: Technical/Scientific Merit, Feasibility, Monitoring, and Assessment**

### **1. Methods, Procedures, and Facilities**

The proposed method to improve the lateral is to replace approximately 16,100 feet of unlined canal with a buried 60-inch-diameter pipe and construct a new flume or siphon crossing of the Sacramento River, to convey water from the ACID Main Canal to the Churn Creek Bottom area. The new buried pipe lateral also will allow the removal of the existing Bonnyview Diversion (Churn Creek Pumping Plant). Alternative methods for installing the pipe across roads and the river (e.g., tunneling, pipe bridge, flume, siphon, open trench) will be evaluated. Also, pipeline siting alternatives and construction staging to avoid interruptions to water deliveries will be evaluated. Project procedures will include CEQA and NEPA compliance, provision for public participation, and long-term monitoring. Procedures during the FS will include data collection to evaluate project feasibility, cursory-level geotechnical and hydrogeologic field reviews, development of aerial photo and mapping coverage at a scale appropriate for conceptual design and FS report drawings, hydrologic evaluations to determine magnitude of achievable water conservation, alternatives analysis, conceptual design, identification of environmental documentation and permitting requirements, development of an order-of-magnitude cost estimate for improvements, and preparation of a Feasibility Report.

### **2. Task List and Schedule**

Extensive engineering and environmental investigations are necessary to further evaluate the feasibility of this project. Tasks and task budgets associated with the FS are listed in Table 1 below. Further descriptions of each task, including deliverables, also follow.

#### **Task 1: Contract Management and Administration**

This task will provide for management of project cost and schedule, administration of grant moneys, coordination and oversight of the project team's activities, and communications with the funding agency contract administrator.

***Deliverables:*** Monthly billings.

#### **Task 2: Quarterly Progress Reports**

The applicant will prepare and submit quarterly reports summarizing degree of completion, activities during the reporting period, findings, costs incurred, and project milestones.

***Deliverables:*** Quarterly reports.

<b>Table 1</b> <b>Proposed Feasibility Study Budget Breakdown</b> <b>ACID Churn Creek Lateral Improvement Project</b>	
<b>Task</b>	<b>Budget</b>
Task 1: Contract Management and Administration	\$0 (Cost Share Item)
Task 2: Quarterly Progress Reports	\$0 (Cost Share Item)
Task 3: Stakeholder Meeting	\$5,000
Task 4: Data Collection	\$20,000
Task 5: Hydrologic Evaluations	\$13,000
Task 6: Alternatives Analysis and Conceptual Design	\$25,000
Task 7: Environmental and Permitting Reconnaissance	\$14,000
Task 8: Cost Estimate	\$5,000
Task 9: Feasibility Report	\$18,000
<b>Total Feasibility Study Cost</b>	<b>\$100,000</b>

### **Task 3: Stakeholder Meeting**

Early in the project, a meeting will be held with patrons of ACID that would benefit or be affected by the project. The purpose of the meeting will be to inform attendees of the purpose and goals of the project, verify permission for access to properties, and identify support/opposition issues. Appropriate city, county, and affected resource agency officials will also be invited to attend to provide input on local and regional planning issues, land use and right-of-way considerations, and other issues.

**Deliverables:** Meeting summary.

### **Task 4: Data Collection**

This task will consist primarily of fieldwork to gather data on the existing Churn Creek lateral delivery system. Project staff will gather water surface elevation data, typical canal dimensions and profile data, and typical widths of existing canal right-of-way and adjacent open space as required to evaluate project feasibility. In addition, cursory-level geotechnical/hydrogeologic field reviews will be conducted to gather data for hydrologic evaluations. Aerial photo and/or mapping coverage will be obtained at a scale appropriate for conceptual design and feasibility study report drawings.

**Deliverables:** Mapping and/or photography, field hydraulic data from the canal, and geotechnical observations, each as presented in the Feasibility Report (Task 9).

### **Task 5: Hydrologic Evaluations**

This task will focus on estimating the magnitude of achievable water conservation if the project were implemented. Information gathered during field reviews, such as condition of the canal, general soil types, and location of the groundwater table, will form the basis of the assessment. The findings of the 1982 SCS study on Churn Creek lateral seepage losses (cited above) will also be evaluated relative to current field observations. One of the principal outcomes of this task will be a simple water balance indicating estimates of Churn Creek lateral deliveries, evaporation, leakage and spills, and seepage for current and proposed future facilities.

***Deliverables:*** Water balance.

### **Task 6: Alternatives Analysis and Conceptual Design**

Alternatives expected to be considered will primarily involve pipe size and alignment (for lateral improvements) and the type of river crossing (flume versus siphon). These alternatives will be evaluated and developed to a degree necessary to determine feasibility, size facilities, estimate costs, evaluate basic environmental and other considerations, and select an apparent best option. Simple drawings of facility locations and typical configurations will also be developed.

***Deliverables:*** Alternatives descriptions and sketches as presented in the Feasibility Report.

### **Task 7: Environmental and Permitting Reconnaissance**

Biological field surveys, resource database review, and other cursory reconnaissance efforts will be used to determine CEQA and NEPA requirements, as well as key permitting requirements. This task will also identify areas of special environmental or cultural concern as applicable to site and alignment selection. The principal objective will be to set the course for environmental documentation and permitting in subsequent project phases.

***Deliverables:*** Observations and planning discussions as presented in the Feasibility Report.

### **Task 8: Cost Estimate**

Order-of-magnitude cost estimates will be developed for the lateral improvements and river crossing facilities concepts. Estimates will be used to aid in alternatives selection and budgeting for future project phases.

***Deliverables:*** Order-of-magnitude cost estimate (also known as Budget estimate).

### **Task 9: Feasibility Report**

The final outcome of this feasibility study will be a Feasibility Report that documents findings and charts a course for implementing the project. It is anticipated that the following topics will be addressed in the report:

- Anticipated benefits and conservation estimates
- Synopsis of alternatives analysis and preferred alternative
- Cost analysis
- Implementation issues and schedule

- Environmental compliance requirements (permitting and environmental documentation)

The report will be issued in draft form to DWR and, after an adequate review period, comments will be incorporated into a final report.

***Deliverables:*** Feasibility Report.

## Work Plan Schedule

Figure 2 illustrates the work plan schedule, including the start and completion dates and major milestones. Note that the schedule assumes receipt of funding on July 1, 2002. Also note that feasibility study activities span several months to reflect the need to gather data during both irrigation and non-irrigation seasons. In addition, ACID's vision of Phases 2 and 3 and the overall implementation schedule of the project are included on the timeline.

Figure 3 provides a quarterly expenditure projection as requested in the solicitation. This expenditure projection includes estimates for future phases of the work not addressed as part of this proposal.

## 3. Monitoring and Assessment

Not required.

## C. Qualifications

### 1. Project Manager

The resume of Dee Swearingen, ACID General Manager, is attached. Mr. Swearingen will administer the contract, oversee the work, and provide all required documentation to DWR.

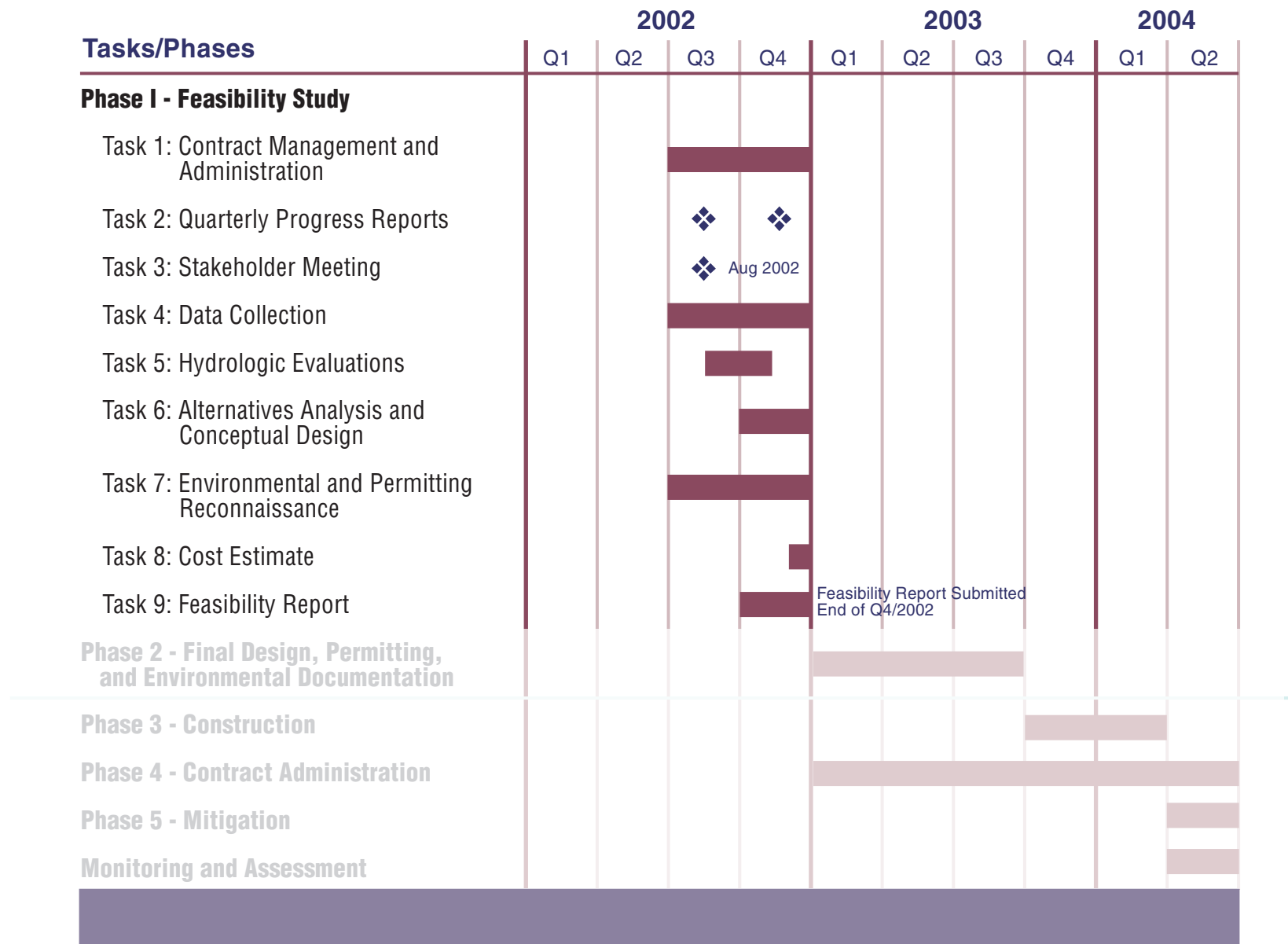
### 2. External Cooperators

It is not anticipated that the project will require additional assistance from any other entity or agency. ACID will coordinate with landowners who may be affected by project construction.

## D. Benefits and Costs

### 1. Budget Justification

- a. **Direct Labor Hours.** None
- b. **Salaries.** None
- c. **Benefits.** None
- d. **Travel.** None
- e. **Supplies and Expendables.** None
- f. **Services or Consultants.** Estimated engineering effort reflects the types of structures to be designed and constructed and data collection and hydrologic analyses processes necessary to proceed with design. It is expected that the project will result in replacement



◆ PROJECT MILESTONES

**FIGURE 2  
WORK SCHEDULE**  
ACID CHURN CREEK LATERAL IMPROVEMENT PROJECT  
ANDERSON-COTTONWOOD IRRIGATION DISTRICT  
PROP 13 GRANT APPLICATION

Tasks/Phases	Total Cost (\$)	2002		2003				2004	
		Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2
<b>Phase I - Feasibility Study</b>									
Task 1: Contract Management and Administration	\$0 (Cost Share)								
Task 2: Quarterly Reports	\$0 (Cost Share)								
Task 3: Stakeholder Meeting	5,000	5,000							
Task 4: Data Collection	20,000	14,000	6,000						
Task 5: Hydrologic Evaluations	13,000	9,000	4,000						
Task 6: Alternatives Analysis and Conceptual Design	25,000	5,000	20,000						
Task 7: Environmental and Permitting Reconnaissance	14,000	7,000	7,000						
Task 8: Cost Estimate	5,000		5,000						
Task 9: Feasibility Report	18,000		18,000						
<b>Phase 1 - Totals</b>	<b>100,000</b>	40,000	60,000						
Phase 2 - Final Design, Permitting, and Environmental Documentation	1,427,000			400,000	500,000	527,000			
Phase 3 - Construction	12,743,000						6,371,500	6,371,500	
Phase 4 - Contract Administration	80,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000
Phase 5 - Mitigation	50,000								50,000
Monitoring and Assessment	0								
<b>Totals</b>	<b>14,400,000</b>	50,000	70,000	410,000	510,000	537,000	6,381,500	6,381,500	60,000

**FIGURE 3**  
**QUARTERLY EXPENDITURE PROJECTION**  
 ACID CHURN CREEK LATERAL IMPROVEMENT PROJECT  
 ANDERSON-COTTONWOOD IRRIGATION DISTRICT  
 PROP 13 GRANT APPLICATION



of the deteriorated lateral with a piped conveyance system that will eliminate a Sacramento River diversion. The engineering effort consists of completion of a feasibility study as described in Section 2.

- g. Equipment.** None
- h. Other Direct Costs.** None
- i. Total Direct Costs. Total items (a) through (g).** \$100,000, entirely comprising the Feasibility Study conducted by the engineering consultant under a service contract.
- j. Indirect Costs.** None
- k. Total Costs.** \$100,000

## 2. Cost Sharing

The applicant's cost share contribution to the project would consist of administering the grant, managing the service contract, and submitting quarterly reports as described for Tasks 1 and 2 under Section B above. The equivalent cost of these tasks, to be absorbed by Anderson-Cottonwood Irrigation District, is estimated to be \$15,000.

## 3. Potential Benefits to be Realized and Information to be Gained

The proposed construction of new facilities is expected to generate numerous benefits for both the local and regional water users. The initial phase of the project being addressed in this proposal will demonstrate the project's feasibility and set the course for future phases by helping to better define costs, benefits, and environmental compliance requirements. The beneficiaries of this program include ACID, downstream users, the environment, and the Sacramento-San Joaquin Delta. The following benefits are discussed in this section.

- Water Supply Benefits
- Water Management Benefits
- Environmental and Water Quality Benefits
- Energy Savings

### Water Supply Benefits

The proposed project would provide the capability to more efficiently manage diversions from the Sacramento River. It would reduce diversions, thereby increasing in-stream flows, and also would reduce evapotranspiration (ET) and seepage losses. Water supply benefits include:

- **Piping**—The piping component would drastically reduce seepage in the Churn Creek Lateral. A 1982 study by the Soil Conservation Service (cited above) indicated that seepage along the east reach of the river may be as much as 8,700 acre-feet/year. Additional losses have occurred along the lateral on the west side of the Sacramento River. Although the amount of seepage is unknown, it is assumed to be significant along the approximately 1.7-mile segment of the lateral on the west side of the river. Assuming an additional 10,000 acre-feet/year west of the river, indicated by the relative length of

the reach, this project would eliminate the seepage losses and produce approximately 19,000 acre-feet/year of new water.

- **Water shortages**—Several Redding Basin municipal and industrial (M&I) Central Valley Project (CVP) water service contractors face shortages during dry years. The project could produce water that could be used to meet water needs. The project would potentially increase the seasonal supply in the Sacramento River downstream of the diversion point. This water could then be made available for other beneficial uses under appropriate short-term or long-term water transfer arrangements with ACID.

### Water Management Benefits

Water management benefits include:

- **System efficiency**—The predominant goal of the project is to increase water use efficiency and conserve water. The installation of underground piping in ACID's Churn Creek Lateral would substantially improve the District's ability to more efficiently utilize its supply. The District, its patrons, and adjacent landowners would benefit by virtue of the new pipeline eliminating seepage onto adjacent property and requiring less maintenance.
- **Capacity**—When originally constructed, the Churn Creek Pumping Plant had a 75-cfs capacity. When the facility was refurbished, its capacity decreased to a maximum of 60 cfs. Implementation of the project would enable the system to convey a 75-cfs capacity, consistent with historical demands and deliveries on the east side of the river.

### Environmental and Water Quality Benefits

As ACID's primary source of supply, the Sacramento River would be directly and most beneficially influenced by the District's efficient use of its water supply. The potential 19,000 acre-feet/year decrease in surface water diversions has the potential for increasing available seasonal in-stream flows to the Sacramento-San Joaquin Delta. This additional water would contribute to addressing Delta water quality concerns that have been at the core of CALFED and other programs' efforts for the past several years. These and other potential environmental benefits associated with this project would be quantified throughout the various stages of the project, from the FS through final design. Beyond flow augmentation, two of the other environmental benefits that have been identified at this level of investigation include:

- **Removal of an existing river diversion**—This project would result in the removal of the Churn Creek Pumping Plant, which would eliminate any potential for fish entrainment or impingement. Two diversions would be consolidated into one diversion that protects fish with a new state-of-the-art fish screen (completed in 2001).
- **Restoration/creation of aquatic habitat**—The footprint of the Churn Creek Pumping Plant, upon its removal, would revert to natural aquatic and riparian habitat.

### Energy Savings

The three 300-horsepower pumps in the Churn Creek Pumping Plant would be eliminated. These pumps presently consume approximately 770,000 kilowatt hours per year. Given the

recent power crisis in California, the elimination of this pumping plant and its energy requirements provides a significant benefit to all Californians.

### **Information to be Gained**

Data collection to be undertaken during the FS will include water surface elevation data, typical canal dimensions and profile, and typical widths of existing canal right-of-way and adjacent open space to evaluate project feasibility; cursory-level geotechnical and hydrogeologic field reviews; aerial photo and mapping coverage at a scale appropriate for conceptual design and FS report drawings; and hydrologic evaluations to determine magnitude of achievable water conservation by constructing a simple water balance indicating estimates of Churn Creek lateral deliveries, evaporation, leakage and spills, and seepage for current and proposed facilities. These hydrologic data are especially important both to inform the FS and to quantify current deliveries, evaporation, leakage and spills, and seepage. This information will provide baseline data to evaluate the long-term success of the project in reducing seepage and ET losses. It will also provide information to CALFED and its associated agencies regarding the benefits (versus cost) of replacing open, unlined channels with closed piping. This information, in turn, can contribute to adaptive management feedback for the WUE program.

## **4. Benefit Realized and Information Gained versus Costs**

A typical current price for the Environmental Water Account is \$50 per acre-foot. Other programs pay a much higher cost, but for this analysis and comparison of project costs and benefits, we have assumed the \$50 per acre-foot rate. For a potential water savings of 19,000 acre-feet per year, this equates to \$950,000 per year.

Energy savings associated with eliminating the Churn Creek Pumping Plant may equate to \$80,000 to \$100,000 per year, depending upon future power rates; current power consumption is 770,000 kilowatt hours per year.

Benefits to ACID customers related to improved water delivery reliability and flexibility, benefits to local and regional water management and planning initiatives, and benefits to fisheries are considered “non-quantified” benefits because no specific monetary value can reasonably be assigned.

## **E. Outreach, Community Involvement, and Acceptance**

The project is an outgrowth of the Sacramento Valley Water Management Agreement among the Sacramento Valley water users, the California Department of Water Resources, the U.S. Bureau of Reclamation, and export water users. The ongoing process that resulted in the Agreement has a strong public outreach component to inform agencies, environmental and other interests, and the public on the Agreement. Numerous presentations have been made to the CALFED Management Team and associated staff, county supervisors in all affected counties, water districts and their customers, and other organizations and agencies, including the State Water Resources Control Board, Trust for Public Lands, The Bay Institute, U.S. Fish and Wildlife Service, Natural Heritage Institute, The Nature Conservancy, and the public. Additional meetings will occur as the planning and implementation process proceeds. No individual or organization has expressed formal opposition to the Agreement or the

projects to be undertaken under the Agreement. The projects, including the one described herein, have been summarized in a published “Short-term Workplan” prepared in conjunction with the Agreement.

Additionally, if they prove to be feasible and are selected for implementation, this and all other capital outlay projects associated with the Agreement will be subject to CEQA and NEPA documentation. The CEQA and NEPA statutes and implementing guidelines ensure that the public and all affected agencies will be fully informed of the project and its effects and receive meaningful opportunities to provide input and review and comment on the project through the CEQA and NEPA public review process.

The project does not directly involve training, employment, or capacity building, but through more efficient agricultural water supply management, it potentially makes more water available for beneficial uses. According to the *Community Assessment Project Report* (Shasta Regional Community Foundation and United Way of Northern California, 2000) Shasta County (i.e., Redding Basin and CALFED Sub-Region 1) typically has higher unemployment (6.6 percent in 1999) and lower average per capita income (31<sup>st</sup> out of 58 California counties in 1999) and median family income (19 percent lower than 1997state average) than the rest of the state. A better managed water supply will help sustain the gains being made in the northern California economy by accommodating growth in industry and agriculture, providing growth in employment opportunities in all economic sectors.

The planning effort associated with the Agreement provides a formal framework for disseminating project information. Feedback on benefits achieved through the management and conservation measures recommended in the Agreement will be made available to all Sacramento Valley water contractors, Reclamation, and DWR through the planning partnership. The participants are aware of the need to share this information to ensure successful water supply management throughout the Sacramento Valley.

## Dee Swearingen Resume